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Arrangement for an integral two-stage ejector

The present invention relates to an arrangement for a two-stage ejector, with a follow-on action, capable of installation centrally in a moulding tool.

Previously disclosed are laterally positioned 5 ejectors of the kind under consideration, each of which sits to either side of a mould and is also used for resetting the ejector plates concerned. The aforementioned previously disclosed ejector arrangements are not suitable for direct connection to an injection moulding machine. After 10 disconnection of the mould, this does not readily lend itself to easy handling and to laying flat on a worktable or some other base because of the parts projecting from the mould. A smooth under surface is also preferable when storing the mould.

15 The principal object of the present invention is thus, in the first instance, to solve the aforementioned problems simply and effectively and without being obliged to make excessively major interventions in the mould in question.

20 The aforementioned object is achieved by means of an arrangement in accordance with the present invention, which is characterized essentially in that a rear ejector part exhibiting connecting means for attachment of the ejector to an injection moulding machine is capable of 25 detachable attachment to the remaining part of the ejector.

The invention is described below with reference to the accompanying drawings, in which:

Fig. 1 shows a sectioned view of a moulding tool with pairs of ejector plates situated in a position in which 30 they are ready to be extended;

Fig. 2 shows the two ejector plates in a common extended position;

Fig. 3 shows the rear ejector plate extended to its end position;

Fig. 4 shows a sectioned view along the line IV-IV in Fig. 1.

The present invention finds an application in a moulding tool 1 in the form of a plastic moulding tool for 5 the injection moulding of plastic components therein. The arrangement 2 in accordance with the invention is intended to achieve the ejection of moulded plastic components from the aforementioned moulding tool 1.

An arrangement 2 of the indicated kind, which is 10 situated on a so-called two-stage ejector 3 capable of installation centrally in the moulding tool 1, and which has a follow-on action, comprises connecting means 4 for attachment of the ejector 3 to an injection moulding machine (not shown in the drawings). In accordance with the invention 15 the rear ejector part 5 of the ejector 3 exhibits an attachment 6 which permits manual actuation of the aforementioned ejector part 5 so that this can be readily detached from the remaining part of the ejector 3 and the aforementioned moulding tool 1. The aforementioned rear 20 ejector part 5 is thus capable of detachable attachment to the remaining part 7 of the ejector 3.

The attachment 6 between the aforementioned rear ejector part 5 and the remaining part 7 of the ejector 3 is 25 in the form of a threaded connection. More specifically, an internal thread 8 in the aforementioned rear ejector part 5 is so arranged as to enclose and accommodate an external thread 9 in a remaining part 10 of the threaded connection 6. The aforementioned detachable ejector part 5 can thus be removed easily, either by hand or with the help of tools, 30 from the telescope-like ejector 3 and attached thereto simply by rotation in the intended direction 11, 12.

The aforementioned rear ejector part 5 is accommodated in such a way as to be displaced through a transcurrent opening 13 in the mould, namely in the tool 35 carrier 14, in conjunction with which the form of the

aforementioned opening is adapted to the front end part 5A of the aforementioned rear ejector part.

The aforementioned rear ejector part 5 exhibits an enlarged accommodating part 15 to accommodate the part 10 and 5 the rear end 16 of an adjacent, cylindrical part of the ejector part 5.

An attachment part 17, which is preferably in the form of a sleeve of irregular shape, to permit detachable attachment of the ejector 3 to an ejector plate 18 situated 10 to its rear, is accommodated with a flange part 19 on the front end 20 of the aforementioned rear ejector part 5.

The aforementioned attachment part 17 is secured by means of screws 21 to the rear ejector plate 18.

The aforementioned rear ejector part 5 exhibits an 15 internal attachment part 4 for detachable attachment to an injection moulding machine (not shown here) and an internal recess 22 at its opposite end for the purpose of accommodating a part 23 of a piston 24 situated at the front of the telescopic ejector arrangement, which is accommodated 20 internally in the part 26 of the ejector 3 provided with a front tool plate 25.

The advantages of the present invention include the fact that the aforementioned two-stage ejector is located at the centre of the mould and is so arranged that it can be 25 attached directly to the injection moulding machine.

When the machine is not in use, the rear part 5 is unscrewed and the mould is thus totally smooth on its under side 27, enabling it to be stood on a worktable or handled in conjunction with any necessary repairs. A smooth under 30 surface is also preferable when storing the mould. Today's moulding tools often have reverse functions or projecting core features, which makes handling difficult when the moulding tool is lying on its side.

The invention is not restricted to the illustrative 35 embodiment described above and illustrated in the drawings,

but may be varied with in the scope of the Patent Claims without departing from the idea of invention.